Space Weather Forecast

Issued on Monday, 29 July 2024 at 01:17 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Minor to Moderate Geomagnetic Storms Days 1 and 2 (29-30 Jul) and a chance on Days 3 and 4 (31 July and 01 Aug). Isolated R1-R2 Minor to Moderate Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with several Moderate flares, the largest reaching M9.9 at 28/0158 UTC from a complex cluster of regions in the southeast. A further M7.7 flare was observed peaking at 28/1042 UTC from the largest area in the southwest.

Eleven sunspot regions feature on the solar disc. In the southwest quadrant, the largest and most complex region. The cluster of sunspot regions transiting across the southeast quadrant continues to grow in size and complexity, with intricate magnetic looping bringing additional instability. In the southwest quadrant, another region grew significantly, with penumbra development. A newly numbered region in the northeast is continuing to grow and develop. The remaining regions appear small, simple and/or largely unchanged.
Associated with the M9.9 was a CME, (Coronal Mass Ejection) which likely coincided with possibly as many as two other CMEs around the same time. This may impact Earth on Days 3 and 4. A partial halo CME observed 27/0600 UTC is due to impact during the next 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds have declined slightly through the period, from 420 km/s to 380 km/s. The Interplanetary magnetic field, Bt, was weak as was the north-south component, Bz. Resulting geomagnetic activity was Quiet (Kp1-2).

Energetic Particles / Solar Radiation: Solar radiation was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is expected to be Moderate with further Moderate flares expected and a chance of isolated strong flares.

Solar Wind /Geomagnetic Activity: Solar winds at low levels until the arrival of the anticipated CMEs when they may reach elevated levels at times. Geomagnetic activity Quiet at first becoming Active with Minor to Moderate storm conditions for a time on Days 1 and 2 with a slight chance of a Strong Storm. The risk continues into the following couple of days with the arrival of a second CME.

Energetic Particles / Solar Radiation: Solar radiation is most likely to remain at background levels. However, there is a slight chance of rising above the S1/Minor Radiation Storm threshold in response to any notable flares.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	60	40	40
Strong	G3	No	20	15	1	1
Severe	G4	No	5	5	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	80	80
Very Active	R3 to R5 X	No	20	20	30	30

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	15	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.